SITE INSPECTION WORKSHEETS

CERCLIS IDENTIFICATION NUMBER
NJD986578284

SITE LOCATION			
SITE NAME: LEGAL, COMMON, OR DESCRIPTIVE NAME OF SITE: Haller Testing Laboratories Inc			
STREET ADDRESS, ROUTE, OR SPECIFIC LOCATION IDENTIFIER: 336 Leland Avenue			
CITY: Plainfield City	STATE: NJ	ZIP CODE: 07061	TELEPHONE: (—)—
COORDINATES: LATITUDE and LONGITUDE: Lat 40° 37' 53" Long. 74° 24' 12"	TOWNSHIP, RANGE, AND SECTION		

OWNER/OPERATOR IDENTIFICATION					
OWNER: Haller Testing Laboratories Inc			OPERATOR: Haller Testing Laboratories Inc		
OWNER ADDRESS: 336 Leland Avenue			OPERATOR ADDRESS: 336 Leland Avenue		
CITY: Plainfield City			CITY: Plainfield City		
STATE: NJ	ZIP CODE: 07061	TELEPHONE: (908)756-4635 (Disconnected)	STATE: NJ	ZIP CODE: 07061	TELEPHONE: ( )

SITE EVALUATION		
AGENCY/ORGANIZATION: NJDEPE/DPFSR/Site Assesment		
INVESTIGATOR: Andrew Cyr HSMS III		
CONTACT: Ken Klop		
ADDRESS: 300 Horizon Center		
CITY: Robbinsville	STATE: New Jersey	ZIP CODE: 08691
TELEPHONE: (609 584-4280		

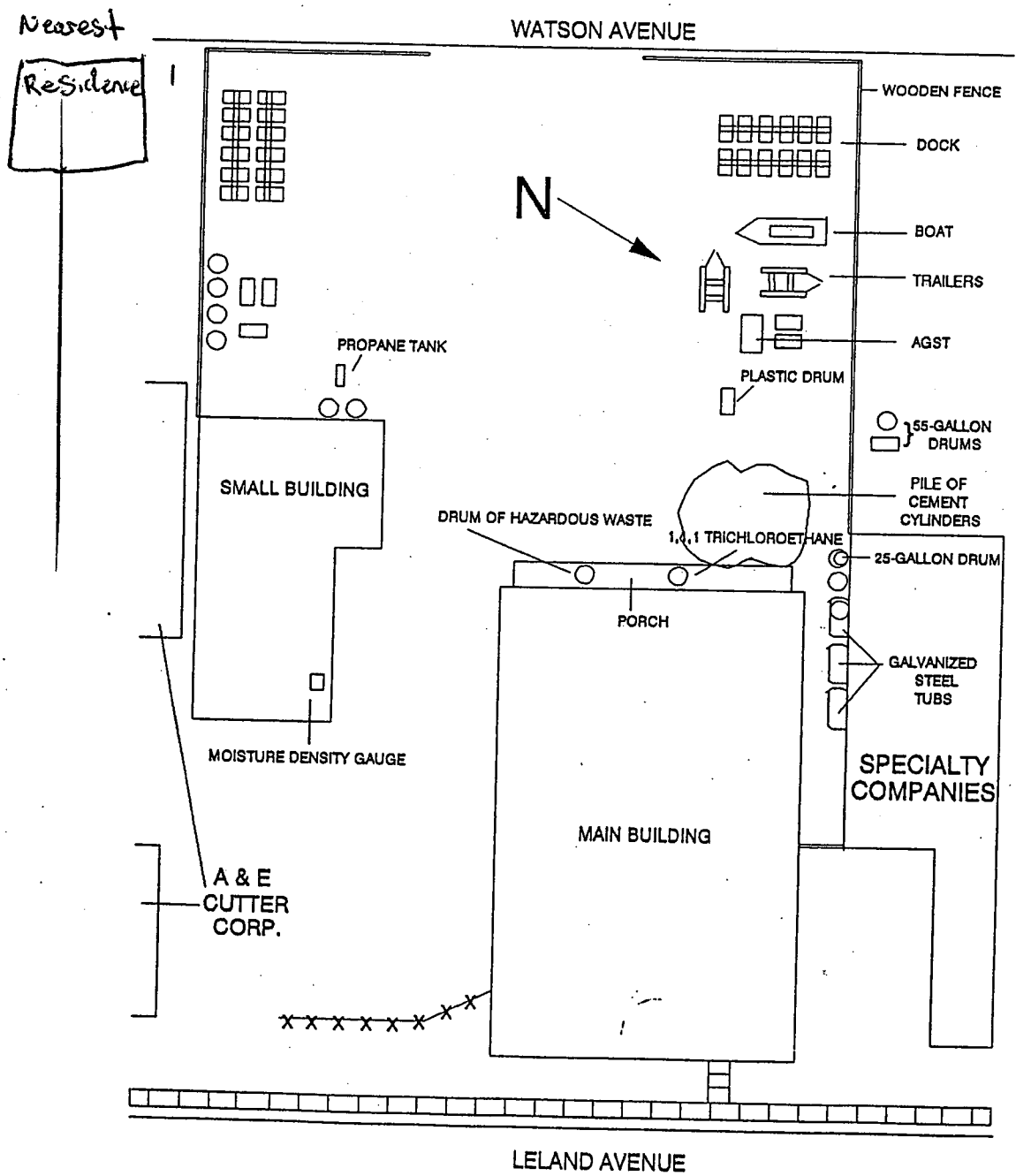
GENERAL INFORMATION

Site Description and Operational History: Provide a brief description of the site and its operational history. State the site name, owner, operator, type of facility and operations, size of property, active or inactive status, and years of waste generation. Summarize waste treatment, storage, or disposal activities that have or may have occurred at the site; note whether these activities are documented or alleged. Identify all source types and prior spills, floods, or fires. Summarize highlights of the PA and other investigations. Cite references.

Haller Testing Laboratories consisted of the physical testing of concrete cylinders and asphalt for the construction industry. Haller Testing Laboratories operated on site from approximately 1927 to January 1993. In December 1994 the Federal Government placed a Lien against the property. The Buildings are currently vacant. Operations produced waste oils and waste halogenated solvents (F002). Inspector conducted in the mid 1980 noted waste water being discharged to two unlined subsurface drainage pits. Samples collected from the pits revealed chloroform, and other VOS. During a June 21, 1993 NJDEPE Inspector noted the buildings to be vacant. Two 55-Gallon Drums (1) marked that waste 1 full drum 1,1,1-trichloroethane. Site is partly overgrown with weeds a small outbuilding had a untestered moisture density gauge readings of above background up to 1,000 uR/Hr were noted. The drainage pits were not located. A residence is located adjacent to the property.

GENERAL INFORMATION (continued)

Site Sketch: Provide a sketch of the site. Indicate all pertinent features of the site and nearby environments including sources of wastes, areas of visible and buried wastes, buildings, residences, access roads, parking areas, fences, fields, drainage patterns, water bodies, vegetation, wells, sensitive environments, and other features.



HALLER TESTING LABORATORIES, INC.
336 LELAND AVENUE
PLAINFIELD CITY, UNION COUNTY
SITE MAP
MAP 2

GENERAL INFORMATION (continued)

Source Description: Include description of containment per pathway for ground water (see HRS Table 3-2), surface water (see HRS Table 4-2), and air (see HRS Tables 6-3 and 6-9).

- 2 - 55 gallon drums noted during June 21, 1993 Inspection

- 2 unlined subsurface drainage pits noted to receive waste water discharges in 1980's

- Contaminated soil identified from 9/8/93 NJDEPE Sampling episode

Hazardous Waste Quantity (HWQ) Calculation: SI Tables 1 and 2 (See HRS Tables 2-5, 2-6, and 5-2).

2 drums ÷ 10 = 0.2

2 drainage pits (surface impoundment) 400 ft^3 ÷ 67.5 = 0.59

contaminated soil ≈ 10,890 ft^2 ÷ 34,000 = 0.32

total 1.11

Attach additional pages, if necessary

HWQ = 10

SI TABLE 1: HAZARDOUS WASTE QUANTITY (HWQ) SCORES FOR SINGLE SOURCE SITES AND FORMULAS FOR MULTIPLE SOURCE SITES

		Single Source Sites (assigned HWQ scores)	
(Column 1) TIER	(Column 2) Source Type	(Column 3) HWQ = 10	(Column 4) HWQ = 100
A Hazardous Constituent Quantity	N/A	HWQ = 1 if Hazardous Constituent Quantity data are complete HWQ = 10 if Hazardous Constituent Quantity data are not complete	>100 to 10,000 lbs
B Hazardous Wastestream Quantity	N/A	≤ 500,000 lbs	>500,000 to 50 million lbs
C Volume	Landfill	≤ 6.75 million ft^3 ≤ 250,000 yd^3	>6.75 million to 675 million ft^3 >250,000 to 25 million yd^3
	Surface impoundment	≤6,750 ft^3 ≤250 yd^3	>6,750 to 675,000 ft^3 >250 to 25,000 yd^3
	Drums	≤1,000 drums	>1,000 to 100,000 drums
	Tanks and non-drum containers	≤50,000 gallons	>50,000 to 5 million gallons
	Contaminated soil	≤6.75 million ft^3 ≤250,000 yd^3	>6.75 million to 675 million ft^3 >250,000 to 25 million yd^3
	Pile	≤6,750 ft^3 ≤250 yd^3	>6,750 to 675,000 ft^3 >250 to 25,000 yd^3
	Other	≤6,750 ft^3 ≤250 yd^3	>6,750 to 675,000 ft^3 >250 to 25,000 yd^3
D Area	Landfill	≤340,000 ft^2 ≤7.8 acres	>340,000 to 34 million ft^2 >7.8 to 780 acres
	Surface impoundment	≤1,300 ft^2 ≤0.029 acres	>1,300 to 130,000 ft^2 >0.029 to 2.9 acres
	Contaminated soil	≤3.4 million ft^2 ≤78 acres	> 3.4 million to 340 million ft^2 > 78 to 7,800 acres
	Pile	≤1,300 ft^2 ≤0.029 acres	>1,300 to 130,000 ft^2 >0.029 to 2.9 acres
	Land treatment	≤27,000 ft^2 ≤0.62 acres	>27,000 to 2.7 million ft^2 >0.62 to 62 acres

TABLE 1 (CONTINUED)

Single Source Sites (assigned HWQ scores)		Multiple Source Sites		
(Column 5) HWQ = 10,000	(Column 6) HWQ = 1,000,000	(Column 7) Divisors for Assigning Source WQ Values	(Column 2) Source Type	(Column 1) TIER
>10,000 to 1 million lbs	> 1 million lbs	lbs ÷ 1	N/A	A Hazardous Constituent Quantity
>50 million to 5 billion lbs	> 5 billion lbs	lbs ÷ 5,000	N/A	B Hazardous Wastestream Quantity
>675 million to 67.5 billion ft^3 >25 million to 2.5 billion yd^3	> 67.5 billion ft^3 > 2.5 billion yd^3	ft^3 ÷ 67,500 yd^3 ÷ 2,500	Landfill	C Volume
>675,000 to 67.5 million ft^3 >25,000 to 2.5 million yd^3	> 67.5 million ft^3 > 2.5 million yd^3	ft^3 ÷ 67.5 yd^3 ÷ 2.5	Surface Impoundment	
>100,000 to 10 million drums	> 10 million drums	drums ÷ 10	Drums	
>5 million to 500 million gallons	> 500 million gallons	gallons ÷ 500	Tanks and non-drum containers	
>675 million to 67.5 billion ft^3 >25 million to 2.5 billion yd^3	> 67.5 billion ft^3 > 2.5 billion yd^3	ft^3 ÷ 67,500 yd^3 ÷ 2,500	Contaminated Soil	
>675,000 to 67.5 million ft^3 >25,000 to 2.5 million yd^3	> 67.5 million ft^3 > 2.5 million yd^3	ft^3 ÷ 67.5 yd^3 ÷ 2.5	Pile	
>675,000 to 67.5 million ft^3 >25,000 to 2.5 million yd^3	> 67.5 million ft^3 > 2.5 million yd^3	ft^3 ÷ 67.5 yd^3 ÷ 2.5	Other	
>34 million to 3.4 billion ft^2 >780 to 78,000 acres	> 3.4 billion ft^2 >78,000 acres	ft^2 ÷ 3,400 acres ÷ 0.078	Landfill	D Area
>130,000 to 13 million ft^2 >2.9 to 290 acres	> 13 million ft^2 > 290 acres	ft^2 ÷ 13 acres ÷ 0.00029	Surface Impoundment	
> 340 million to 34 billion ft^2 > 7,800 to 780,000 acres	> 34 billion ft^2 > 780,000 acres	ft^2 ÷ 34,000 acres ÷ 0.78	Contaminated Soil	
> 130,000 to 13 million ft^2 > 2.9 to 290 acres	> 13 million ft^2 > 290 acres	ft^2 ÷ 13 acres ÷ 0.00029	Pile	
>2.7 million to 270 million ft^2 >62 to 6,200 acres	> 270 million ft^2 > 6,200 acres	ft^2 ÷ 270 acres ÷ 0.0062	Land Treatment	

HAZARDOUS WASTE QUANTITY (HWQ) CALCULATION

For each migration pathway, evaluate HWQ associated with sources that are available (i.e., incompletely contained) to migrate to that pathway. (Note: If *Actual Contamination Targets* exist for ground water, surface water, or air migration pathways, assign the calculated HWQ score or 100, whichever is greater, as the HWQ score for that pathway.) For each source, evaluate HWQ for one or more of the four tiers (SI Table 1; HRS Table 2-5) for which data exist: constituent quantity, wastestream quantity, source volume, and source area. Select the tier that gives the highest value as the source HWQ. Select the source volume HWQ rather than source area HWQ if data for both tiers are available.

Column 1 of SI Table 1 indicates the quantity tier. Column 2 lists source types for the four tiers. Columns 3, 4, 5, and 6 provide ranges of waste amount for sites with only one source, corresponding to HWQ scores at the tops of the columns. Column 7 provides formulas to obtain source waste quantity values at sites with multiple sources.

1. Identify each source type.
2. Examine all waste quantity data available for each source. Record constituent quantity and waste stream mass or volume. Record dimensions of each source.
3. Convert source measurements to appropriate units for each tier to be evaluated.
4. For each source, use the formulas in the last column of SI Table 1 to determine the waste quantity value for each tier that can be evaluated. Use the waste quantity value obtained from the highest tier as the quantity value for the source.
5. Sum the values assigned to each source to determine the total site waste quantity.
6. Assign HWQ score from SI Table 2 (HRS Table 2-6).

Note these exceptions to evaluate soil exposure pathway HWQ (see HRS Table 5-2):

- The divisor for the area (square feet) of a landfill is 34,000.
- The divisor for the area (square feet) of a pile is 34.
- Wet surface impoundments and tanks and non-drum containers are the only sources for which volume measurements are evaluated for the soil exposure pathway.

SI TABLE 2: HWQ SCORES FOR SITES

Site WQ Total	HWQ Score
0	0
1[a] to 100	1[b]
> 100 to 10,000	100
> 10,000 to 1 million	10,000
> 1 million	1,000,000

[a] If the WQ total is between 0 and 1, round it to 1.
[b] If the hazardous constituent quantity data are not complete, assign the score of 10.

SI TABLE 3: WASTE CHARACTERIZATION WORKSHEET

Site Name: Heller Testing Laboratories

References ATTachments C, D, F, G, H and I

Sources:

1. Drums
2. Drainage Pits
3. Contaminated Soil
4.
5.
6.
7.
8.
9.

SOURCE	HAZARDOUS SUBSTANCE	TOXICITY	GROUND WATER PATHWAY		SURFACE WATER PATHWAY							GROUND WATER TO SURFACE WATER			
					OVERLAND/FLOOD MIGRATION						J = (I x Bio Accum Enh)				
		A	B	C=(AxB)	D	E=(AxD)	F	G=(ExF)	H	I=(DxH)					
			GW Mobility (HRS Table 3-8)	Tox/ Mobility Value (HRS Table 3-9)	Per (HRS Tables 4-10 and 4-11)	Tox/Per Value (HRS Table 4-12)	Bioac Pot. (HRS Table 4-15)	Tox/ Pers/ Bioac Value (HRS Table 4-16)	Ecotox (HRS Table 4-19)	Ecotox/ Pers (HRS Table 4-20)	Ecotox/ Pers/ Bioacc Value (HRS Table 4-21)	Tox/ Mob/ Pers Value (HRS Table 4-26)	Tox/ Mob/ Pers/ Bioacc Value (HRS Table 4-28)	Ecotox/ Mob/ Pers Value (HRS Table 4-29)	Ecotox/ Mob/ Per/ Bioacc Value (HRS Table 4-30)
#1	000071-55-6	10	1.0E+00	1000	0.4	4	5	20	10	4	20				
#2	000067-66-3	100	1.0E+00	100	0.4	40	5	200	10	4	20				
#3	000056-55-3	1000	2.0E-9	2.0E-6	1.0	1000	50,000	5.0E+7	10,000	10,000	5.0E+8				
#3	000207-08-9	NA	2.0E-5	NA	1.0	NA	50,000	NA	NA	NA	NA				
#3	000050-32-8	10,000	2.0E-9	2.0E-5	1.0	10,000	50,000	5.0E+8	10,000	10,000	5.0E+8				
#3	000053-70-3	10,000	2.0E-9	2.0E-5	1.0	10,000	50,000	5.0E+8	NA	NA	NA				
#3	001336-36-3	10,000	2.0E-9	2.0E-5	1.0	10,000	50,000	5.0E+8	10,000	10,000	5.0E+8				
#3	007440-41-7	10,000	1.0E-2	100	1.0	10,000	50	500,000	NA	NA	NA				
#3	007440-43-9	10,000	1.0E+00	10,000	1.0	10,000	5000	5.0E+7	100	100	500,000				
#3	007439-92-1	10,000	2.0E-5	0.2	1.0	10,000	50	500,000	1000	1000	5.0E+6				
#3	007439-97-6	10,000	2.0E-5	0.2	1.0	10,000	50,000	5.0E+8	10,000	10,000	5.0E+8				

benzo(a) Anthracene - 000056-55-3
benzo(b) Fluoranthene - NA
benzo(k) Fluoranthene 000207-08-9
benzo(a) Pyrene - 000050-32-8

Indeno(1,2,3-cd) Pyrene - NA
Dibenz(a,h)anthracene - 000053-70-3
Aroclor-1254 - 001336-36-3
Beryllium - 007440-41-7

Cadmium - 007440-43-9
Lead - 007439-92-1
Mercury - 007439-97-6
Chloroform - 000067-66-3
1,1,1-Trichloroethane - 000071-55-6

SI TABLE 4: GROUND WATER OBSERVED RELEASE SUBSTANCES (BY AQUIFER)

Sample ID	Hazardous Substance	Bckgrd. Conc.	Toxicity/ Mobility	References
		Highest Toxicity/Mobility		

N.A.

SI TABLE 5: GROUND WATER ACTUAL CONTAMINATION TARGETS

Well ID: _____ Level I _____ Level II _____ Population Served _____ References _____

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
			Highest Percent		Sum of Percents		Sum of Percents	

Well ID: _____ Level I _____ Level II _____ Population Served _____ References _____

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
			Highest Percent		Sum of Percents		Sum of Percents	

GROUND WATER PATHWAY
GROUND WATER USE DESCRIPTION

Describe Ground Water Use within 4 Miles of the Site:
Describe generalized stratigraphy, aquifers, municipal and private wells

The site is underlain by the Brunswick Formation. In the Southern portion of Union County the Brunswick is mantled by unconsolidated Pleistocene deposits.# The Brunswick is the major aquifer of Union County. Most public supply wells tap into the Brunswick. Depth of wells within 40 miles range from 300 to 767 feet deep. There are also public wells tapped into the Pleistocene stratified drift. There are no private wells within Plainfield however there are numerous private wells in Watchung, Green Brook and Warren Twp. Somerset County.

Show Calculations of Ground Water Drinking Water Populations for each Aquifer:
Provide apportionment calculations for blended supply systems.
County average number of persons per household: _____ Reference Attachment DD EE

E Town

wells.

0-1/4 7 wells 2861/well

7 x 2861 = 20,027

1/4-1/2 = 0 wells = 0

1/2-1 = 0 wells = 0

1-2 = 0 wells = 0

2-3 = 0 wells = 0

3-4 = 12 wells 12 x 2861 = 34332

E Town, 515,000 people served.
80% From SW
20% = 103000 From GW
12 wells active in Essex Union Co
24 wells active in Somerset & Hunterdon Co.
103,000 ÷ 36 = 2861 pop/well

Middlesex Water Co

51% of water from GW
30 wells Serve = 106590
= 3553 people/well

0-1/4 = 0 wells
1/4-1/2 = 0 wells
1/2-1 = 0 wells
1-2 = 0 wells
2-3 = 18 wells 18 x 3553 = 63954
3-4 = 12 wells 12 x 3553 = 42636

Approximately 245 private wells between 2.5 and 40 miles of site.
2.59 people/residence
x 245 = 635 ÷ 3 = 211

2.5 - 3 = 211
3 - 4 = 424

C-14

GROUND WATER PATHWAY WORKSHEET

LIKELIHOOD OF RELEASE	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to the aquifer, assign a score of 550. Record observed release substances on SI Table 4.			
2. POTENTIAL TO RELEASE: Depth to aquifer: 60 feet. If sampling data do not support a release to the aquifer, and the site is in karst terrain or the depth to aquifer is 70 feet or less, assign a score of 500; otherwise, assign a score of 340. Optionally, evaluate potential to release according to HRS Section 3.	500	E	ATT FF
LR =	500		

TARGETS			
Are any wells part of a blended system? Yes ✓ No ____ If yes, attach a page to show apportionment calculations.			
3. ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates that any target drinking water well for the aquifer has been exposed to a hazardous substance from the site, evaluate the factor score for the number of people served (SI Table 5). Level I: ____ people x 10 = ____ Level II: ____ people x 1 = ____ Total =			
4. POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking water wells for the aquifer or overlying aquifers that are not exposed to a hazardous substance from the site; record the population for each distance category in SI Table 6a or 6b. Sum the population values and multiply by 0.1.	27,274 x 0.1 = 2727	E	ATT DD+EE
5. NEAREST WELL: Assign a score of 50 for any Level I Actual Contamination Targets for the aquifer or overlying aquifer. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Targets exist, assign the Nearest Well score from SI Table 6a or 6b. If no drinking water wells exist within 4 miles, assign 0.	20	E	
6. WELLHEAD PROTECTION AREA (WHPA): If any source lies within or above a WHPA for the aquifer, or if a ground water observed release has occurred within a WHPA, assign a score of 20; assign 5 if neither condition applies but a WHPA is within 4 miles; otherwise assign 0.	0		
7. RESOURCES: Assign a score of 5 if one or more ground water resource applies; assign 0 if none applies. • Irrigation (5 acre minimum) of commercial food crops or commercial forage crops • Watering of commercial livestock • Ingredient in commercial food preparation • Supply for commercial aquaculture • Supply for a major or designated water recreation area, excluding drinking water use	0		
Sum of Targets T=	2747		

SI TABLE 6 (From HRS TABLE 3-12): VALUES FOR POTENTIAL CONTAMINATION GROUND WATER TARGET POPULATIONS

SI Table 6a: Other Than Karst Aquifers

Distance from Site	Pop.	Nearest Well (choose highest)	Population Served by Wells within Distance Category												Pop. Value	Ref.
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1000	1001 to 3000	3001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000		
0 to $\frac{1}{4}$ mile	20,027	20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455	16325	MAPS DD, EE
$>\frac{1}{4}$ to $\frac{1}{2}$ mile	0	18	2	11	33	102	324	1,013	3,233	10,122	32,325	101,213	323,243	1,012,122	0	" "
$>\frac{1}{2}$ to 1 mile	0	9	1	5	17	52	167	523	1,669	5,224	16,684	52,239	166,835	522,385	0	" "
> 1 to 2 miles	0	5	0.7	3	10	30	94	294	939	2,939	9,385	29,384	93,845	293,842	0	" "
> 2 to 3 miles	64165	3	0.5	2	7	21	68	212	678	2,122	6,778	21,222	67,777	212,219	6,778	" "
>3 to 4 miles	77392	2	0.3	1	4	13	42	131	417	1,306	4,171	13,060	41,709	130,596	4,171	" "

Nearest Well = 20

Sum = 27,274

SI TABLE 6 (From HRS TABLE 3-12): VALUES FOR POTENTIAL CONTAMINATION GROUND WATER TARGET POPULATIONS (continued)

SI Table 6b: Karst Aquifers

Distance from Site	Pop.	Nearest Well (choose highest)	Population Served by Wells within Distance Category												Pop. Value	Ref.
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1000	1001 to 3000	3001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000		
0 to $\frac{1}{4}$ mile		20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455		
$>\frac{1}{4}$ to $\frac{1}{2}$ mile		20	2	11	33	102	324	1,013	3,233	10,122	32,325	101,213	323,243	1,012,122		
$>\frac{1}{2}$ to 1 mile		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
> 1 to 2 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
> 2 to 3 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
>3 to 4 miles		20	2	9	26	82	261	817	2,607	8,163	26,068	81,623	260,680	816,227		
Nearest Well =														**Sum =**		

GROUND WATER PATHWAY WORKSHEET (concluded)

WASTE CHARACTERISTICS	Score	Data Type	Does not Apply
8. If any Actual Contamination Targets exist for the aquifer or overlying aquifers, assign the calculated hazardous waste quantity score or a score of 100, whichever is greater; if no Actual Contamination Targets exist, assign the hazardous waste quantity score calculated for sources available to migrate to ground water.	10		
9. Assign the highest ground water toxicity/mobility value from SI Table 3 or 4.	10,000	H	
10. Multiply the ground water toxicity/mobility and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below: (from HRS Table 2-7)			

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to < 10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E + 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 or greater	100

WC = 18

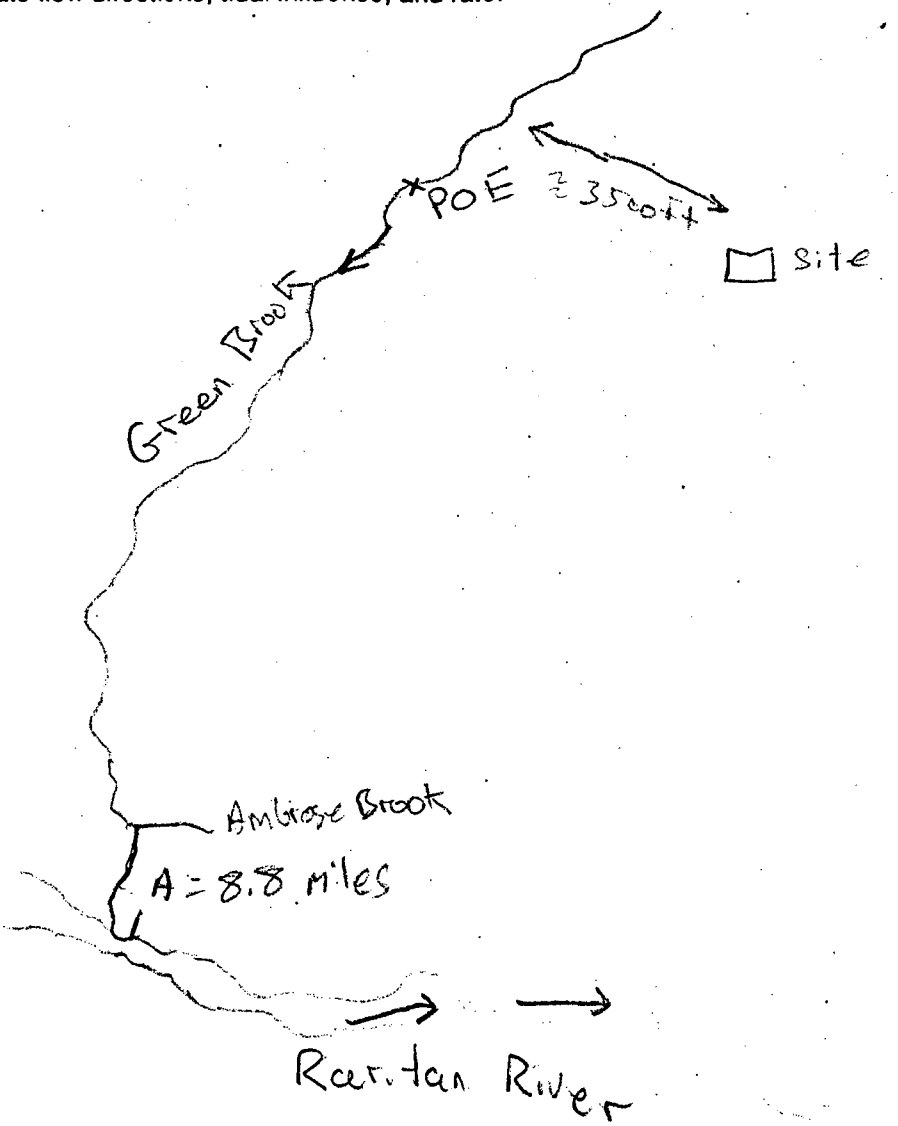
Multiply LR by T and by WC. Divide the product by 82,500 to obtain the ground water pathway score for each aquifer. Select the highest aquifer score. If the pathway score is greater than 100, assign 100.

GROUND WATER PATHWAY SCORE: $\frac{LR \times T \times WC}{82,500}$ = 100 (Maximum of 100)

$\frac{500 \times 2747 \times 18}{82,500} = 299.6$

SURFACE WATER PATHWAY

Sketch of the Surface Water Migration Route:
Label all surface water bodies. Include runoff route and drainage direction, probable point of entry, and 15-mile target distance limit. Mark sample locations, intakes, fisheries, and sensitive environments. Indicate flow directions, tidal influence, and rate.



NA

SI TABLE 7: SURFACE WATER OBSERVED RELEASE SUBSTANCES

Sample ID	Hazardous Substance	Bckgrd. Conc.	Toxicity/ Persistence	Toxicity/ Persis./ Bioaccum	Ecotoxicity/ Persis/ Ecobioaccum	References
		Highest Values				

SI TABLE 8: SURFACE WATER DRINKING WATER ACTUAL CONTAMINATION TARGETS

Intake ID: _____ Sample Type _____ Level I _____ Level II _____ Population Served _____ References _____

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
			Highest Percent		Sum of Percents		Sum of Percents	

Intake ID: _____ Sample Type _____ Level I _____ Level II _____ Population Served _____ References _____

Sample ID	Hazardous Substance	Conc. (µg/L)	Benchmark Conc. (MCL or MCLG)	% of Benchmark	Cancer Risk Conc.	% of Cancer Risk Conc.	RfD	% of RfD
			Highest Percent		Sum of Percents		Sum of Percents	

SURFACE WATER PATHWAY
LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT WORKSHEET

LIKELIHOOD OF RELEASE– OVERLAND/FLOOD MIGRATION	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to surface water in the watershed, assign a score of 550. Record observed release substances on SI Table 7.			
2. POTENTIAL TO RELEASE: Distance to surface water: 3500 (feet) If sampling data do not support a release to surface water in the watershed, use the table below to assign a score from the table below based on distance to surface water and flood frequency.	100	E	USGS, Map 1

Distance to surface water <2500 feet	500
Distance to surface water >2500 feet, and:	
Site in annual or 10-yr floodplain	500
Site in 100-yr floodplain	400
Site in 500-yr floodplain	300
Site outside 500-yr floodplain	100

Optionally, evaluate surface water potential to release according to HRS Section 4.1.2.1.2

LR = 100

LIKELIHOOD OF RELEASE GROUND WATER TO SURFACE WATER MIGRATION	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to surface water in the watershed, assign a score of 550. Record observed release substances on SI Table 7. NOTE: Evaluate ground water to surface water migration only for a surface water body that meets all of the following conditions: 1) A portion of the surface water is within 1 mile of site sources having a containment factor greater than 0. 2) No aquifer discontinuity is established between the source and the above portion of the surface water body. 3) The top of the uppermost aquifer is at or above the bottom of the surface water. Elevation of top of uppermost aquifer _____ Elevation of bottom of surface water body _____			
2. POTENTIAL TO RELEASE: Use the ground water potential to release. Optionally, evaluate surface water potential to release according to HRS Section 3.1.2.			

LR = 0

SURFACE WATER PATHWAY
LIKELIHOOD OF RELEASE AND DRINKING WATER THREAT WORKSHEET (CONTINUED)

DRINKING WATER THREAT TARGETS	Score	Data Type	Refs
Record the water body type, flow, and number of people served by each drinking water intake within the target distance limit in the watershed. If there is no drinking water intake within the target distance limit, assign 0 to factors 3, 4, and 5. Intake Name / Water Body Type / Flow / People Served NO Intakes Within 15 miles Are any intakes part of a blended system? Yes _____ No _____ If yes, attach a page to show apportionment calculations. 3. ACTUAL CONTAMINATION TARGETS: If analytical evidence indicates a drinking water intake has been exposed to a hazardous substance from the site, list the intake name and evaluate the factor score for the drinking water population (SI Table 8). Level I: _____ people x 10 = _____ Level II: _____ people x 1 = _____ Total =			
4. POTENTIAL CONTAMINATION TARGETS: Determine the number of people served by drinking water intakes for the watershed that have not been exposed to a hazardous substance from the site. Assign the population values from SI Table 9. Sum the values and multiply by 0.1.			
5. NEAREST INTAKE: Assign a score of 50 for any Level I Actual Contamination Drinking Water Targets for the watershed. Assign a score of 45 if there are Level II targets for the watershed, but no Level I targets. If no Actual Contamination Drinking Water Targets exist, assign a score for the intake nearest the PPE from SI Table 9. If no drinking water intakes exist, assign 0.			
6. RESOURCES: Assign a score of 5 if one or more surface water resource applies; assign 0 if none applies. • Irrigation (5 acre minimum) of commercial food crops or commercial forage crops • Watering of commercial livestock • Ingredient in commercial food preparation • Major or designated water recreation area, excluding drinking water use	5		
SUM OF TARGETS T=	5		

SI TABLE 9 (From HRS Table 4-14): DILUTION-WEIGHTED POPULATION VALUES FOR POTENTIAL CONTAMINATION FOR SURFACE WATER MIGRATION PATHWAY

Type of Surface Water Body	Pop.	Nearest Intake	Number of people									Pop. Value
			0	1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	
Minimal Stream (<10 cfs)	0	20	0	4	17	53	164	522	1,633	5,214	16,325	
Small to moderate stream (10 to 100 cfs)	0	2	0	0.4	2	5	16	52	163	521	1,633	
Moderate to large stream (> 100 to 1,000 cfs)	0	0	0	0.04	0.2	0.5	2	5	16	52	163	
Large Stream to river (>1,000 to 10,000 cfs)	0	0	0	0.004	0.02	0.05	0.2	0.5	2	5	16	
Large River (> 10,000 to 100,000 cfs)	0	0	0	0	0.002	0.005	0.02	0.05	0.2	0.5	16	
Very Large River (>100,000 cfs)	0	0	0	0	0	0.001	0.002	0.005	0.02	0.05	0.2	
Shallow ocean zone or Great Lake (depth < 20 feet)	0	0	0	0	0.002	0.005	0.02	0.05	0.2	0.5	2	
Moderate ocean zone or Great Lake (Depth 20 to 200 feet)	0	0	0	0	0	0.001	0.002	0.005	0.02	0.05	0.2	
Deep ocean zone or Great Lake (depth > 200 feet)	0	0	0	0	0	0	0.001	0.003	0.008	0.03	0.08	
3-mile mixing zone in quiet flowing river (≥ 10 cfs)	0	10	0	2	9	26	82	261	817	2,607	8,163	
		Nearest Intake =	0								Sum =	0

References _____

NA

SI TABLE 10: HUMAN FOOD CHAIN ACTUAL CONTAMINATION TARGETS FOR WATERSHED

Fishery ID: _____ Sample Type _____ Level I _____ Level II _____ References _____

Sample ID	Hazardous Substance	Conc. (mg/kg)	Benchmark Concentration (FDAAL)	% of Benchmark	Cancer Risk Concentration.	% of Cancer Risk Concentration	RfD	% of RfD
			Highest Percent		Sum of Percents		Sum of Percents	

SI TABLE 11: SENSITIVE ENVIRONMENT ACTUAL CONTAMINATION TARGETS FOR WATERSHED

Environment ID: _____ Sample Type _____ Level I _____ Level II _____ Environment Value _____

Sample ID	Hazardous Substance	Conc.. (µg/L)	Benchmark Concentration (AWQC or AALAC)	% of Benchmark	References
			Highest Percent		

Environment ID: _____ Sample Type _____ Level I _____ Level II _____ Environment Value _____

Sample ID	Hazardous Substance	Conc.. (µg/L)	Benchmark Concentration (AWQC or AALAC)	% of Benchmark	References
			Highest Percent		

SURFACE WATER PATHWAY (continued)
HUMAN FOOD CHAIN THREAT WORKSHEET

HUMAN FOOD CHAIN THREAT TARGETS	Score	Data Type	Refs
Record the water body type and flow for each fishery within the target distance limit. If there is no fishery within the target distance limit, assign a score of 0 at the bottom of this page.			

Fishery Name _____ Water Body Green Brook Flow 10.8 cfs — E — Attachment KK
Species _____ Production _____ lbs/yr
Species _____ Production _____ lbs/yr

Fishery Name _____ Water Body Raritan River Flow = 590 cfs — E
Species _____ Production _____ lbs/yr
Species _____ Production _____ lbs/yr

Fishery Name _____ Water Body _____ Flow _____ cfs
Species _____ Production _____ lbs/yr
Species _____ Production _____ lbs/yr

FOOD CHAIN INDIVIDUAL

7. ACTUAL CONTAMINATION FISHERIES:

If analytical evidence indicates that a fishery has been exposed to a hazardous substance with a bioaccumulation factor greater than or equal to 500 (SI Table 10), assign a score of 50 if there is a Level I fishery. Assign 45 if there is a Level II fishery, but no Level I fishery.

8. POTENTIAL CONTAMINATION FISHERIES:

If there is a release of a substance with a bioaccumulation factor greater than or equal to 500 to a watershed containing fisheries within the target distance limit, but there are no Level I or Level II fisheries, assign a score of 20.

If there is no observed release to the watershed, assign a value for potential contamination fisheries from the table below using the lowest flow at all fisheries within the target distance limit:

Lowest Flow	FCI Value
<10 cfs	20
10 to 100 cfs	2
>100 cfs, coastal tidal waters, oceans, or Great Lakes	0
3-mile mixing zone in quiet flowing river	10

FCI Value = 2

SUM OF TARGETS T = 2

SURFACE WATER PATHWAY (continued)
ENVIRONMENTAL THREAT WORKSHEET

When measuring length of wetlands that are located on both sides of a surface water body, sum both frontage lengths. For a sensitive environment that is more than one type, assign a value for each type.

ENVIRONMENTAL THREAT TARGETS — Score | Data Type | Refs

Record the water body type and flow for each surface water sensitive environment within the target distance (see SI Table 12). If there is no sensitive environment within the target distance limit, assign a score of 0 at the bottom of the page.

Environment Name	Water Body Type	Flow
wetlands	Green Brook	10.8 cfs
wetlands	Raritan River	590 cfs
		cfs
		cfs
		cfs

Data Type: E Refs: ATTACH

9. ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS: If sampling data or direct observation indicate any sensitive environment has been exposed to a hazardous substance from the site, record this information on SI Table 11, and assign a factor value for the environment (SI Tables 13 and 14).

Environment Name	Environment Type and Value (SI Tables 13 & 14)	Multiplier (10 for Level I, 1 for Level II)	Product
		x =	
		x =	
		x =	
		x =	
		Sum =	

10. POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS:

Flow	Dilution Weight (SI Table 12)	Environment Type and Value (SI Tables 13 & 14)	Pot. Cont.	Product
10.8 cfs	0.1 x	wetlands 150 x	0.1 =	1.5
590 cfs	0.01 x	wetlands 50 x	0.1 =	0.05
cfs	x	x	0.1 =	
cfs	x	x	0.1 =	
cfs	x	x	0.1 =	
		Sum =		

Data Type: E

T = 1.55

SI TABLE 12 (HRS Table 4-13): SURFACE WATER DILUTION WEIGHTS

Type of Surface Water Body		Assigned Dilution Weight
Descriptor	**Flow Characteristics**	
Minimal stream	< 10 cfs	1
Small to moderate stream	10 to 100 cfs	0.1
Moderate to large stream	> 100 to 1,000 cfs	0.01
Large stream to river	> 1,000 to 10,000 cfs	0.001
Large river	> 10,000 to 100,000 cfs	0.0001
Very large river	> 100,000 cfs	0.00001
Coastal tidal waters	Flow not applicable; depth not applicable	0.001
Shallow ocean zone or Great Lake	Flow not applicable; depth less than 20 feet	0.001
Moderate depth ocean zone or Great Lake	Flow not applicable; depth 20 to 200 feet	0.0001
Deep ocean zone or Great Lake	Flow not applicable; depth greater than 200 feet	0.000005
3-mile mixing zone in quiet flowing river	10 cfs or greater	0.5

SI TABLE 13 (HRS TABLE 4-23): SURFACE WATER AND AIR SENSITIVE ENVIRONMENTS VALUES

SENSITIVE ENVIRONMENT	*ASSIGNED VALUE*
Critical habitat for Federal designated endangered or threatened species Marine Sanctuary National Park Designated Federal Wilderness Area Ecologically important areas identified under the Coastal Zone Wilderness Act Sensitive Areas identified under the National Estuary Program or Near Coastal Water Program of the Clean Water Act Critical Areas identified under the Clean Lakes Program of the Clean Water Act (subareas in lakes or entire small lakes) National Monument (air pathway only) National Seashore Recreation Area National Lakeshore Recreation Area	100
Habitat known to be used by Federal designated or proposed endangered or threatened species National Preserve National or State Wildlife Refuge Unit of Coastal Barrier Resources System Coastal Barrier (undeveloped) Federal land designated for the protection of natural ecosystems Administratively Proposed Federal Wilderness Area Spawning areas critical for the maintenance of fish/shellfish species within a river system, bay, or estuary Migratory pathways and feeding areas critical for the maintenance of anadromous fish species within river reaches or areas in lakes or coastal tidal waters in which the fish spend extended periods of time Terrestrial areas utilized by large or dense aggregations of vertebrate animals (semi-aquatic foragers) for breeding National river reach designated as recreational	75
Habitat known to be used by State designated endangered or threatened species Habitat known to be used by a species under review as to its Federal endangered or threatened status Coastal Barrier (partially developed) Federally designated Scenic or Wild River	50
State land designated for wildlife or game management State designated Scenic or Wild River State designated Natural Area Particular areas, relatively small in size, important to maintenance of unique biotic communities	25
State designated areas for the protection of maintenance of aquatic life under the Clean Water Act	5
Wetlands — See SI Table 14 (Surface Water Pathway) or SI Table 23 (Air Pathway)	

SI TABLE 14 (HRS TABLE 4-24): SURFACE WATER WETLANDS FRONTAGE VALUES

Total Length of Wetlands	Assigned Value
Less than 0.1 mile	0
0.1 to 1 mile	25
Greater than 1 to 2 miles	50
Greater than 2 to 3 miles	75
Greater than 3 to 4 miles	100
Greater than 4 to 8 miles	150
Greater than 8 to 12 miles	250
Greater than 12 to 16 miles	350
Greater than 16 to 20 miles	450
Greater than 20 miles	500

SURFACE WATER PATHWAY (concluded)
WASTE CHARACTERISTICS, THREAT, AND PATHWAY SCORE SUMMARY

WASTE CHARACTERISTICS

	Score
14. If an Actual Contamination Target (drinking water, human food chain, or environmental threat) exists for the watershed, assign the calculated hazardous waste quantity score, or a score of 100, whichever is greater.	
15. Assign the highest value from SI Table 7 (observed release) or SI Table 3 (no observed release) for the hazardous substance waste characterization factors below. Multiply each by the surface water hazardous waste quantity score and determine the waste characteristics score for each threat.	

	Substance Value		HWQ		Product	WC Score (from Table) (Maximum of 100)
Drinking Water Threat Toxicity/Persistence	10,000	x	10	=	100,000	10
Food Chain Threat Toxicity/Persistence Bioaccumulation	5.0E+8	x	10	=	5.0E9	100)
Environmental Threat Ecotoxicity/Persistence/ Ecobioaccumulation	5.0E+8	x	10	=	5.0E9	100

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to < 10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E + 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 to <1E + 09	100
1E + 09 to <1E + 10	180
1E + 10 to <1E + 11	320
1E + 11 to <1E + 12	560
1E + 12 or greater	1000

SURFACE WATER PATHWAY THREAT SCORES

Threat	Likelihood of Release (LR) Score	Targets (T) Score	Pathway Waste Characteristics (WC) Score (determined above)	Threat Score $\frac{LR \times T \times WC}{82,500}$ (maximum of 100)	
Drinking Water	100	5	10		0.06
Human Food Chain	100	2	100		0.24
Environmental	100	1.55	100	(maximum of 60)	0.18

5000 / 82500

SURFACE WATER PATHWAY SCORE (Drinking Water Threat + Human Food Chain Threat + Environmental Threat)

(maximum of 100) 0.48

SOIL EXPOSURE PATHWAY

If there is no observed contamination (e.g., ground water plume with no known surface source), do not evaluate the soil exposure pathway. Discuss evidence for no soil exposure pathway.

Soil Exposure Resident Population Targets Summary

For each property (duplicate page 35 as necessary):

If there is an area of observed contamination on the property and within 200 feet of a residence, school, or day care center, enter on Table 15 each hazardous substance by sample ID. Record the detected concentration. Obtain cancer risk, and reference dose concentrations from SCDM. Sum the cancer risk and reference dose percentages for the substances listed. If cancer risk or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate the residents and students as Level I. If both percentages are less than 100% or all are N/A, evaluate the targets as Level II.

SI TABLE 15: SOIL EXPOSURE RESIDENT POPULATION TARGETS

Residence ID: _____ Level I ✓ Level II _____ Population _____

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
S-3	Benzo(a) Anthracene	3.3	NA	NA	NA	NA	1000	
S-3	Benzo(b) Fluoranthene	3.4	NA	NA	NA	NA	NA	ATT II
S-3	Benzo(K)Fluoranthene	3.1	NA	NA	NA	NA	10,000	
S-3	Benzo(A) Pyrene	3.2	5.1 E-2	6274	NA	NA	10,000	
S-3	Indeno(1,2,3-CD) Pyrene	5.1	NA	NA	NA	NA	NA	
			Highest Percent	6274 %	Sum of Percents		Sum of Percents	

Residence ID: _____ Level I ✓ Level II _____ Population _____

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
S-3	CADMIUM	1.5	NA	NA	2.9E+2	0.51	10000	11
S-3	Lead	590	NA	NA	NA	NA	10,000	
S-3	Mercury	46.7	NA	NA	1.6E+2	27.5	10,000	
S-1	Beryllium	1.1	1.4 E-1	785	2.9E+3	0.037	10,000	
S-1	Lead	178	NA	NA	NA	NA	10,000	
			Highest Percent	785	Sum of Percents		Sum of Percents	

Residence ID: _____ Level I ✓ Level II _____ Population _____

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
S-4	Lead	232	NA	NA	NA	NA	10,000	
S-6	Benzo(a)anthracene	4.3	NA	NA	NA	NA	1000	11
S-6	Benzo(b) Fluoranthene	3.4	NA	NA	NA	NA	NA	
S-6	Benzo(k)Fluoranthene	2.7	NA	NA	NA	NA	10,000	
S-6	Benzo(a) Pyrene	4.2	5.1E-2	8235	NA	NA	10,000	
			Highest Percent	8235	Sum of Percents		Sum of Percents	

SI TABLE 15: SOIL EXPOSURE RESIDENT POPULATION TARGETS

Residence ID: _____ Level I ✓ Level II ____ Population _____

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
S-6	Indeno (1,2,3-cd) Pyrene	3.2	NA	NA	NA	NA	NA	
S-6	Dibenz(a,h)anthracene	1.9	NA	NA	NA	NA	10,000	ATT II
S-6	Lead	334	NA	NA	NA	NA	10,000	
S-7	PCBs	0.6	7.6E-2	78	NA	NA	10,000	
S-8	CADMIUM	2.2	NA	NA	2.9E+2	0.75	10,000	
			Highest Percent		Sum of Percents		Sum of Percents	

Residence ID: _____ Level I ✓ Level II ____ Population _____

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
S-8	Lead	594	NA	NA	NA	NA	10,000	11
S-10	Lead	212	NA	NA	NA	NA	10,000	
S-11	Benzo(a) Pyrene	0.86	5.1E-2	166	NA	NA	~~10,000~~	10,000 71
S-11	Indeno(1,2,3-cd)Pyrene	1.3	NA	NA	NA	NA	NA	
S-11	Lead	340	NA	NA	NA	NA	10,000	
			Highest Percent		Sum of Percents		Sum of Percents	

Residence ID: _____ Level I _____ Level II _____ Population _____

Sample ID	Hazardous Substance	Conc. (mg/kg)	Cancer Risk Concentration	% of Cancer Risk Conc.	RfD	% of RfD	Toxicity Value	References
S-12	Lead	102	NA	NA	NA	NA	10,000	
S-14	Lead	593	NA	NA	NA	NA	10,000	
			Highest Percent		Sum of Percents		Sum of Percents	

SOIL EXPOSURE PATHWAY WORKSHEET
RESIDENT POPULATION THREAT

LIKELIHOOD OF EXPOSURE	Score	Data Type	Refs
1. OBSERVED CONTAMINATION: If evidence indicates presence of observed contamination (depth of 2 feet or less), assign a score of 550; otherwise, assign a 0. Note that a likelihood of exposure score of 0 results in a soil exposure pathway score of 0.	550		
LE =	550		

ATT. AA. MAP 3

TARGETS			
2. RESIDENT POPULATION: Determine the number of people occupying residences or attending school or day care on or within 200 feet of areas of observed contamination (HRS section 5.1.3). 2 Residences × 2.64 people per Residen = 5.28 Level I: 5.28 people x 10 = 52.8 Level II: _____ people x 1 = _____ Sum =	52.8	E	1990 Census
3. RESIDENT INDIVIDUAL: Assign a score of 50 if any Level I resident population exists. Assign a score of 45 if there are Level II targets but no Level I targets. If no resident population exists (*i.e.*, no Level I or Level II targets), assign 0 (HRS Section 5.1.3).	50		
4. WORKERS: Assign a score from the table below for the total number of workers at the site and nearby facilities with areas of observed contamination associated with the site.	0		
5. TERRESTRIAL SENSITIVE ENVIRONMENTS: Assign a value for each terrestrial sensitive environment (SI Table 16) in an area of observed contamination.	0		
6. RESOURCES: Assign a score of 5 if any one or more of the following resources is present on an area of observed contamination at the site; assign 0 if none applies. • Commercial agriculture • Commercial silviculture • Commercial livestock production or commercial livestock grazing	0		
Total of Targets T=	102.8		

Number of Workers	Score
0	0
1 to 100	5
101 to 1,000	10
>1,000	15

Terrestrial Sensitive Environment Type	Value

Sum = 0

SI TABLE 16 (HRS TABLE 5-5): SOIL EXPOSURE PATHWAY TERRESTRIAL SENSITIVE ENVIRONMENT VALUES

TERRESTRIAL SENSITIVE ENVIRONMENT	*ASSIGNED VALUE*
Terrestrial critical habitat for Federal designated endangered or threatened species National Park Designated Federal Wilderness Area National Monument	100
Terrestrial habitat known to be used by Federal designated or proposed threatened or endangered species National Preserve (terrestrial) National or State terrestrial Wildlife Refuge Federal land designated for protection of natural ecosystems Administratively proposed Federal Wilderness Area Terrestrial areas utilized by large or dense aggregations of animals (vertebrate species) for breeding	75
Terrestrial habitat used by State designated endangered or threatened species Terrestrial habitat used by species under review for Federal designated endangered or threatened status	50
State lands designated for wildlife or game management State designated Natural Areas Particular areas, relatively small in size, important to maintenance of unique biotic communities	25

SOIL EXPOSURE PATHWAY WORKSHEET
NEARBY POPULATION THREAT

LIKELIHOOD OF EXPOSURE		Score	Data Type	Ref.
7. Attractiveness/Accessibility (from SI Table 17 or HRS Table 5-6)	Value 10		E	~~AA~~ AA,
Area of Contamination (from SI Table 18 or HRS Table 5-7)	Value 20			
Likelihood of Exposure (from SI Table 19 or HRS Table 5-8)				
	LE =	5		

TARGETS	Score	Data Type	Ref.
8. Assign a score of 0 if Level I or Level II resident individual has been evaluated or if no individuals live within 1/4 mile travel distance of an area of observed contamination. Assign a score of 1 if nearby population is within 1/4 mile travel distance and no Level I or Level II resident population has been evaluated.	0		
9. Determine the population within 1 mile travel distance that is not exposed to a hazardous substance from the site (*i.e.*, properties that are not determined to be Level I or Level II); record the population for each distance category in SI Table 20 (HRS Table 5-10). Sum the population values and multiply by 0.1.	10.2	E	
~~100~~ 102 x .1	T = 10.2		

SI TABLE 17 (HRS TABLE 5-6): ATTRACTIVENESS/ACCESSIBILITY VALUES

Area of Observed Contamination	Assigned Value
Designated recreational area	100
Regularly used for public recreation (for example, vacant lots in urban area)	75
Accessible and unique recreational area (for example, vacant lots in urban area)	75
Moderately accessible (may have some access improvements–for example, gravel road) with some public recreation use	50
Slightly accessible (for example, extremely rural area with no road improvement) with some public recreation use	25
Accessible with no public recreation use	10
Surrounded by maintained fence or combination of maintained fence and natural barriers	5
Physically inaccessible to public, with no evidence of public recreation use	0

SI TABLE 18 (HRS TABLE 5-7): AREA OF CONTAMINATION FACTOR VALUES

Total area of the areas of observed contamination (square feet)	Assigned Value
≤ to 5,000	5
> 5,000 to 125,000	20
> 125,000 to 250,000	40
> 250,000 to 375,000	60
> 375,000 to 500,000	80
> 500,000	100

SI TABLE 19 (HRS TABLE 5-8): NEARBY POPULATION LIKELIHOOD OF EXPOSURE FACTOR VALUES

AREA OF CONTAMINATION FACTOR VALUE	ATTRACTIVENESS/ACCESSIBILITY FACTOR VALUE						
	100	75	50	25	10	5	0
100	500	500	375	250	125	50	0
80	500	375	250	125	50	25	0
60	375	250	125	50	25	5	0
40	250	125	50	25	5	5	0
20	125	50	25	5	5	5	0
5	50	25	5	5	5	5	0

SI TABLE 20 (HRS TABLE 5-10): DISTANCE-WEIGHTED POPULATION VALUES FOR NEARBY POPULATION THREAT

Travel Distance Category (miles)	Pop.	Number of people within the travel distance category												Pop. Value
		0	1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,001	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	
Greater than 0 to $\frac{1}{4}$	120	0	0.1	0.4	1.0	4	13	41	130	408	1,303	4,081	13,034	4
Greater than $\frac{1}{4}$ to $\frac{1}{2}$	3060	0	0.05	0.2	0.7	2	7	20	65	204	652	2,041	6,517	65
Greater than $\frac{1}{2}$ to 1	4,320	0	0.02	0.1	0.3	1	3	10	33	102	326	1,020	3,258	33

Reference(s) GEMS

Sum = 102

SOIL EXPOSURE PATHWAY WORKSHEET (concluded)

WASTE CHARACTERISTICS

10.	Assign the hazardous waste quantity score calculated for soil exposure	10
11.	Assign the highest toxicity value from SI Table 16	10,000
12.	Multiply the toxicity and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below:	WC = 10

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to < 10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E + 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 or greater	100

RESIDENT POPULATION THREAT SCORE: $550 \times 10 \times 2.8 \times 10$

(Likelihood of Exposure, Question 1;
Targets = Sum of Questions 2, 3, 4, 5, 6)

$$\frac{LE \times T \times WC}{82,500}$$

6.85

NEARBY POPULATION THREAT SCORE: $5 \times 10 \times 2 \times 10$

(Likelihood of Exposure, Question 7;
Targets = Sum of Questions 8, 9)

$$\frac{LE \times T \times WC}{82,500}$$

0.006

SOIL EXPOSURE PATHWAY SCORE:
Resident Population Threat + Nearby Population Threat

6.856
(Maximum of 100)

AIR PATHWAY

Air Pathway Observed Substances Summary Table

On SI Table 21, list the hazardous substances detected in air samples of a release from the site. Include only those substances with concentrations significantly greater than background levels. Obtain benchmark, cancer risk, and reference dose concentrations from SCDM. For NAAQS/NESHAPS benchmarks, determine the highest percentage of benchmark obtained for any substance. For cancer risk and reference dose, sum the percentages for the substances listed. If benchmark, cancer risk, or reference dose concentrations are not available for a particular substance, enter N/A for the percentage. If the highest benchmark percentage or the percentage sum calculated for cancer risk or reference dose equals or exceeds 100%, evaluate targets in the distance category from which the sample was taken and any closer distance categories as Level I. If the percentages are less than 100% or all are N/A, evaluate targets in that distance category and any closer distance categories that are not Level I as Level II.

AIR PATHWAY WORKSHEET

LIKELIHOOD OF RELEASE	Score	Data Type	Refs
1. OBSERVED RELEASE: If sampling data or direct observation support a release to air, assign a score of 550. Record observed release substances on SI Table 21.			
2. POTENTIAL TO RELEASE: If sampling data do not support a release to air, assign a score of 500. Optionally, evaluate air migration gaseous and particulate potential to release (HRS Section 6.1.2).	500	E	
LR =	500		

TARGETS			
3. ACTUAL CONTAMINATION POPULATION: Determine the number of people within the target distance limit subject to exposure from a release of a hazardous substance to the air. a) Level I: _____ people x 10 = _____ b) Level II: _____ people x 1 = _____ **Total =**			
4. POTENTIAL TARGET POPULATION: Determine the number of people within the target distance limit not subject to exposure from a release of a hazardous substance to the air, and assign the total population score from SI Table 22. Sum the values and multiply the sum by 0.1. 555 x .1 =	55.5	E	
5. NEAREST INDIVIDUAL: Assign a score of 50 if there are any Level I targets. Assign a score of 45 if there are Level II targets but no Level I targets. If no Actual Contamination Population exists, assign the Nearest Individual score from SI Table 22.	20		
6. ACTUAL CONTAMINATION SENSITIVE ENVIRONMENTS: Sum the sensitive environment values (SI Table 13) and wetland acreage values (SI Table 23) for environments subject to exposure from the release of a hazardous substance to the air.	.187 ⊗		
7. POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS: Use SI Table 24 to evaluate sensitive environments not subject to exposure from a release.			
8. RESOURCES: Assign a score of 5 if one or more air resources apply within 1/2 mile of a source; assign a 0 if none applies. • Commercial agriculture • Commercial silviculture • Major or designated recreation area	5	E	USGS
T =	80.687		

Sensitive Environment Type	*Value*
Wetland Acreage	*Value*

SI TABLE 22 (From HRS TABLE 6-17): VALUES FOR POTENTIAL CONTAMINATION AIR TARGET POPULATIONS

Distance from Site	Pop.	Nearest Individual (choose highest)	Number of People within the Distance Category												Pop. Value
			1 to 10	11 to 30	31 to 100	101 to 300	301 to 1,000	1,001 to 3,000	3,001 to 10,000	10,001 to 30,000	30,001 to 100,000	100,001 to 300,000	300,001 to 1,000,000	1,000,000 to 3,000,000	
On a source		20	4	17	53	164	522	1,633	5,214	16,325	52,137	163,246	521,360	1,632,455	
0 to $\frac{1}{4}$ mile	120	*	1	4	13	41	131	408	1,304	4,081	13,034	40,812	130,340	408,114	41
$>\frac{1}{4}$ to $\frac{1}{2}$ mile	3,060	2	0.2	0.9	3	9	28	88	282	882	2,815	8,815	28,153	88,153	282
$>\frac{1}{2}$ to 1 mile	4,320	1	0.06	0.3	0.9	3	8	26	83	261	834	2,612	8,342	26,119	83
> 1 to 2 miles	20,665	0	0.02	0.09	0.3	0.8	3	8	27	83	266	833	2,659	8,326	83
> 2 to 3 miles	26,415	0	0.009	0.04	0.1	0.4	1	4	12	38	120	375	1,199	3,755	38
>3 to 4 miles	28,280	0	0.005	0.02	0.07	0.2	0.7	2	7	28	73	229	730	2,285	28
	Nearest Individual =	20												**Sum =**	555

References GEMS, USGS

* Score = 20 if the Nearest Individual is within $\frac{1}{8}$ mile of a source; score = 7 if the Nearest Individual is between $\frac{1}{8}$ and $\frac{1}{4}$ mile of a source.

SI TABLE 23 (HRS TABLE 6-18): AIR PATHWAY VALUES FOR WETLAND AREA

Wetland Area	Assigned Value
< 1 acre	0
1 to 50 acres	25
> 50 to 100 acres	75
> 100 to 150 acres	125
> 150 to 200 acres	175
> 200 to 300 acres	250
> 300 to 400 acres	350
> 400 to 500 acres	450
> 500 acres	500

SI TABLE 24: DISTANCE WEIGHTS AND CALCULATIONS FOR AIR PATHWAY POTENTIAL CONTAMINATION SENSITIVE ENVIRONMENTS

Distance	Distance Weight	Sensitive Environment Type and Value (from SI Tables 13 and 20)	Product
On a Source	0.10	x	0
		x	
0 to 1/4 mile	0.025	x	
		x	
		x	
1/4 to 1/2 mile	0.0054	x 25 wetlands	0.135
		x	
		x	
1/2 to 1 mile	0.0016	x 25 wetlands	0.04
		x	
		x	
1 to 2 miles	0.0005	x 25 wetlands	0.0125
		x	
		x	
2 to 3 miles	0.00023	x	
		x	
		x	
3 to 4 miles	0.00014	x	
		x	
		x	
> 4 miles	0	x	
		Total Environments Score =	.187

AIR PATHWAY (concluded)

WASTE CHARACTERISTICS

9.	If any Actual Contamination Targets exist for the air pathway, assign the calculated hazardous waste quantity score or a score of 100, whichever is greater; if there are no Actual Contamination Targets for the air pathway, assign the calculated HWQ score for sources available to air migration.	10
10.	Assign the highest air toxicity/mobility value from SI Table 21.	0
11.	Multiply the air pathway toxicity/mobility and hazardous waste quantity scores. Assign the Waste Characteristics score from the table below:	WC = 0

Product	WC Score
0	0
>0 to <10	1
10 to <100	2
100 to <1,000	3
1,000 to < 10,000	6
10,000 to <1E + 05	10
1E + 05 to <1E + 06	18
1E + 06 to <1E + 07	32
1E + 07 to <1E + 08	56
1E + 08 or greater	100

AIR PATHWAY SCORE: $\frac{LE \times T \times WC}{82,500}$ = 0 (maximum of 100)

500 x 80.687 x 0

SITE SCORE CALCULATION	S	S^2
GROUND WATER PATHWAY SCORE (S_{GW})	100	10,000
SURFACE WATER PATHWAY SCORE (S_{SW})	0.48	0.23
SOIL EXPOSURE (S_S)	6.85	46.9
AIR PATHWAY SCORE (S_A)	0	0
SITE SCORE $\sqrt{\frac{S_{GW}^2+S_{SW}^2+S_S^2+S_A^2}{4}} = \sqrt{\frac{10,000+0.23+469+0}{4}} = \sqrt{2511.7}$		50.1

COMMENTS